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EX PARTE OR LATE FILED

June 10, 1997

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Federal Communications Commission
Office of Secretary

The Secretary
Federal Communications Commission
1919 M. Street N.W. Room 222
Washington, DC 20554

In the Matter of	)	ET-Docket No. 93-62
Guidelines for Evaluating the Environmental	)	and Report and Order FCC 96-326
Effects of Radiofrequency Radiation	)	and First Memorandum ofUnderstanding and Order FCC 96-487

Ex Parte Comments Pertaining to ET-Docket 93-62 Regarding
PETITIONS FOR RECONSIDERATION of Commission Rule & Order FCC 96-326, and First Memorandum of Opinion and Order FCC 96-487

with original and 2 copies submitted to the Secretary of the Commission in accordance with 47 CFR §1.1202, 1.1203, and 1.1206(a)

Dear Mr. Secretary,

Enclosed please find an original and 2 copies of an ex parte presentation pertaining to ET-Docket 93-62 and being submitted in accordance with 47 CFR §1.1202, 1.1203, and 1.1206(a). Please assure these are put in the official record of this proceeding.

Thank you

David Fichtenberg

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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, DC 20554

In the Matter of	)	ET-Docket No. 93-62
Guidelines for Evaluating the Environmental	)	and Report and Order FCC 96-326
Effects of Radiofrequency Radiation	)	and First Memorandum of Understanding and Order FCC 96-487

To: The Commission

Ex Parte Comments Pertaining to ET-Docket 93-62 Regarding
PETITIONS FOR RECONSIDERATION of Commission Rule & Order FCC 96-326, and First Memorandum of Opinion and Order FCC 96-487

with original and 2 copies submitted to the Secretary of the Commission in accordance with 47 CFR §1.1202, 1.1203, and 1.1206(a)

Submitted by the Ad-hoc Association of Parties Concerned About the Federal Communications Commission's Radiofrequency Health and Safety Rules
PO Box 7577
Olympia, WA 98507-7577 Tel: (206) 722-8306

Dated June 10, 1997

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Summary

There is new evidence that supports the claims of the Ad-Hoc Association of Parties Concerned About the Federal Communications Commission Health and Safety Rules ("Ad-Hoc Association).

(1) The Commission needs to state the protection provided and not provided by its rules. Ms. Mary Nichols of EPA reaffirmed statements of EPA's N. Hankin and confirmed he correctly construed EPA's position that Commission rules are known to only provide protection from thermal hazards. Other federal health agencies and the International Radiation Protection Association support the EPA view. Also, strong evidence of adverse effects, including disruption of learned behaviors which is the criteria used to set the Commission's standard occurred in many experiments below the Commission's hazard threshold, indicating more stringent limits are needed. Also, numerous studies linking low exposure levels of RF to cancer are given, as well as recent epidemiology studies. These all serve to emphasize that the Commission or the federal health agencies upon which the Commission has relied have overlooked or misunderstood or have been unaware of the above important RF health related information.

Because the Commission does not have health expertise it needs to ask the federal health agencies to evaluate the Ad-Hoc Association RF health claims and requests as well as those of other parties in this proceeding. The Commission misunderstands what is the prudent course if it asks concerned parties to share concerns directly with the federal health agencies: the parties may not do it, the Commission is responsible, and past experience indicates that the federal health agencies will not advise the Commission until asked - so the Commission must ask these agencies to evaluate RF health claims in this proceeding and it should anticipate that the these agencies may have overlooked or misunderstood important information affecting their recommendations to the Commission.

(2) Because of the above adverse effects the Commission, and the precedence set by the Nuclear Regulatory Commission ("NRC") the Commission should accept the recommendation of NIOSH and put in the Commission's rules that RF exposure kept as low as reasonably achievable.

(3) Likewise, the NRC has adopted an RF safety program in its standard similar to that recommended by OSHA and NIOSH. This precedent demonstrates that it is prudent, proper, and within the Commission's jurisdiction to state the elements and objective of a required RF program as OSHA specified.

(4) In addition, the NRC also did not generally allow grandfathering of past rules. The precedent set by the NRC establishes that the proper course for the Commission is that all licensees follow the new rules -this is especially justified given the adverse effects which has been found.

(5) While telecommunication operators have pointed out numerous uncertain concerning meeting compliance, the Commission should give simple rules as the expense of safety - both are needed.) Adopt methods which need to be able to detect out-of compliance at upper floors of buildings near the transmitters especially when tall transmitters are close to nearby multi-story buildings resulting in out-of-compliance exposures at upper floor levels.

(6) Reduce environmental exposures to 40% of present values associated with given internal rates of absorption of RF energy - based on a computer method found valid by the FCC.

(7) Reduce the FCC hazard threshold to no more than 15% of its current value - based upon the accepted RF standard setting criteria of disruption of learned behavior and scientific papers acceptable for standard setting.

(8) Determine that local regulation of RF exposure limits effects the "operation" of wireless transmitters and so is not preempted in the Telecommunications Act of 1996.

(9) Determine that FCC exposures should be reduced to 5%, 1%, or even 0.1% of current standards, and if the Commission is not able to do so, to identify those effects as reported in this proceeding which occur at exposure levels such that protection limits 1/100th of the exposure levels at which these effects occur are below the exposure limits which the Commission may set.

The public and workers which may be exposed so such levels should be notified that some evidence suggests that if the effects are real, that protection from these effects may not be provided by the Commission's limits.

(10) Exposure limits should not be so wide that "a reasonable person" would not want to live or work in areas with such high exposure conditions, 'reasonable' including one who is knowledgeable of the effects reported in this proceeding and to be reported in the scientific literature.

(11) The Commission should not 'take' property, per the 5th or 14th amendments where the use of property is substantially affected due to the level or other characteristics of the RF exposure.

The Commission should seek the evaluation of the federal health agencies, as n

Before the

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Washington, D.C. 20554

In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation	)))	ET-Docket No. 93-62 and Report and Order FCC 96-326 and First Memorandum of Understanding and Order FCC 96-487

To: The Commission

Ex Parte Comments Pertaining to ET-Docket 93-62 Regarding
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with original and 2 copies submitted to the Secretary of the Commission in accordance with 47 CFR §1.1202, 1.1203, and 1.1206(a)

0. Introduction:

The Ad-hoc Association of Parties Concerned About the Federal Communications Commission's Radiofrequency Health and Safety Rules ("the Ad-Hoc Association") understands that a Federal Communications Commission ("Commission") "Sunshine Agenda" period is not now in effect regarding ET-Docket 93-62 per 47 CFR §1.1202(f) and §1.1203, and that administrative finality has not yet been decided upon concerning the Commission's responses to Petitions For Reconsideration that have been submitted in this proceeding. Accordingly, the Ad-Hoc Association is making an ex parte submission. Herein the Ad-Hoc Association recalls some key considerations in this proceeding which support the requests of the Ad-Hoc Association Petitions For Reconsideration concerning FCC 96-326 and FCC 96-487. Also, the Ad-Hoc Association notes recent significant information, concerns, and requests pertaining to this proceeding. To the extent that these comments rely on findings that were not previously presented to the Commission, these facts and reports became available after the last opportunity for filing in this matter, and in any event, consideration of these facts and comments significantly relates to changes needed for the public health and is in the public interest. In this way, the Ad-Hoc Association is providing an opportunity for the Commission to review and pass upon the

matters presented herein[1]. Should the Commission find it appropriate to modify other sections of 47 CFR to implement the intent of proposed solutions of the Ad-Hoc Association, it is requested that it do so, and make any other modifications it finds to be just and proper.

1. There is new significant information to consider which further supports the claims of the Ad-Hoc Association that (1) the Commission radiofrequency ("RF") hazard threshold is not to be expected to provide sufficient protection, (2) that the Commission's hazard threshold is too high, (3) that RF exposures should be kept as low as reasonably achievable.

1.1 Environmental Protection Agency ("EPA") reaffirmation of the Ad-Hoc Association claims: Ms. Mary Nichols, Environmental Protection Agency ("EPA") Assistant Director of the Office of Air and Radiation reaffirmed in a January 17, 1997 letter to the Commission the claim in the Ad-Hoc Association Petition that the protection of the Commission's criteria is known only to prevent adverse thermal effects.

This was done by way of her referring to the statements of N. Hankin of the EPA who clarified that the adequate protection provided by the Commission's limits pertains to protection from adverse thermal effects associated with an average whole body specific absorption rate ("SAR") of 4 Watts per kilogram of body weight (4 W/kg). Ms. Nichols stated, *"Apparently, Mr. Hankin's response has been incorrectly construed as a departure from the Administrator's position in July (1996)."* She thereby indicates his comments correctly construed and are consistent with the view and comments of the EPA Administrator's postilion in July, 1996.

1.2 A two fold increase in lymphoma cancer incidence was reported in the May 1997 issue of Radiation Research, and was associated with average RF exposure levels no more than 35% of the hazard threshold which the Commission used to derive its exposure limits.[2]

1.3 A 30% increase in palpable apparent mammary tumors in mammary prone mice exposed to 30% of the Commission's hazard threshold was reported in March/April 1997[3].

1.4 At about 8% of the Commission's hazard threshold the EEG pattern of rats was abnormal during sleep (Vorobyov, 1997)[4].

1.5 At about 63% of the Commission's hazard threshold, and at 835 MHz and certain modulation patterns there was a 40% increase in ornithine decarboxylase activity which is associated with stimulation of cell growth functions (Penafiel, 1997)[5].

Recent British epidemiological studies add support to a RF - leukemia link

1.6 A study near one British transmission tower, Sutton Coldfield, with 4 television and 3 VHF radio stations were studied. The combined effective radiated power from the year 1982 was 4750 kW ERP. The study reported, *"The risk of adult leukemia within 2 km was 1.83* (i.e. almost twice the risk as those living further than 2 km) *and there was a significant decline in risk with distance from the transmitter....A significant decline in risk was also found for skin cancer ..."*[6] [H. Dolk, 1997a]. Thus the risk of having adult leukemia was almost 2 fold greater for those who lived near the transmitter.

1.7 A follow-up study was made [H.Dolk et al, 1997b] of 20 other transmitters in England to determine if there was a relationship between cancer and distance from a RF transmitter. The authors note, *"No other transmitter resembles Sutton Coldfield exactly in its combination of both high power TV and FM transmission."* Indeed, the highest power of the other TV transmitters did not exceed 1000 kW vs. 4000 kW from Sutton Coldfield TV stations. FM transmitters were limited to 250 kW vs. 750 kW from 3 FM stations at Sutton Coldfield. Because population living near these transmitters was sparse, for only one transmitter, Crystal Palace, was the expected number of leukemia cases greater than 6 (62 cases were expected). For this transmitter the authors report, *"A significant decline in leukemia risk with distance was demonstrated for this transmitter alone..."* After studying groups of transmitters, the authors conclude noting, *"there is evidence of a decline in leukemia risk with distance from transmitters..."*[7] [H. Dolk, 1997b].

2. It is essential that prior to deciding upon Ad-Hoc Association requests that the Commission receive from the federal health agencies their evaluation of the Petitions for Reconsideration of the Ad-Hoc Association regarding FCC 96-326 and FCC 96-487; likewise for requests regarding RF health concerns of other parties in this proceeding.

2.1 While the Commission has primary responsibility for implementing its RF environmental exposure guidelines, the Commission has repeatedly emphasized it *"is not a health and safety*

agency and would defer to the judgment of these expert agencies [i.e. EPA, Food and Drug Administration("FDA"), National Institute of Occupational Safety and Health ("NIOSH"), Occupational Safety and Health Administration ("OSHA") *with respect to determining appropriate levels of safe exposure to RF energy."*[8] Therefore, to properly fulfil its responsibilities and act with prudence and due diligence, the Commission must ask for a response from the federal health agencies participating in this proceeding in order to decide if RF health related claims and requests are valid of the Ad-Hoc Assoication FCC 96-326 and FCC 96-487 Petitions and other parties in this proceeding raising concerns that the Commission's rules are not sufficiently protective.

2.2. The Commission needs to directly seek advice from federal health agencies when parties present information to the Commission they believe merit more stringent RF rules - by not doing so the Commission has overlooked or misunderstood prudent policy.

2.2.1 The Ad-Hoc Association is especially concerned that the Commission will not seek the evaluation of the federal health agencies concerning the Ad-Hoc Association petitions in this proceeding because of the Commission's recent decisions not to seek advice from the these federal health agencies. For example, in its First Memorandum of Opinion and Order FCC 96-487 the Commission states,

> *"We do not concur with petitioners who suggest that granting any extension of the transition period will have significant adverse effects on public health."*[9]

Since the Commission gave no reference in the above decision to evaluations of any of the federal health agencies supporting the Commission's assessment, it appears no such evaluations were received. Thus, it appears the Commission made the above decision regarding RF health effects matters about which it acknowledges it does not have expertise; accordingly, it acted in an arbitrary and capricious manner, and not in the public interest.

2.2.2 Similarly, consider how the Commission responded[10] to a letter dated September 19, 1996, to Chairman Hundt from Ms. Lucinda Grant of the Electrical Sensitivity Network. In her letter she reported biological effects of concern to her and to others described as electrically sensitive. The Commission advised her to inform the federal health agencies to which the Commission said it deferred for advice; it appears the Commission did not initiate any request to

the federal health agencies to evaluate Ms. Grant's information. [see letter attached]. The difficulties with this approach of the Commission include:

(a) If acting upon the new information of Ms. Grant may be important for the public welfare, then the Commission should not rely upon assuming that a private citizen will successfully initiate and be able to inform the appropriate parties at the federal health agencies.

(b) The Commission is responsible for its rules being correct and thus is obligated to ask federal health agencies to evaluate new health information provided to it. Specifically, if Ms. Grant finds the federal agencies advising the Commission have overlooked, misunderstood, or were unaware of important information pertaining to advice they gave the Commission, then the Commission should act with prudence and due diligence, and since it admits it does not have expertise to evaluate the presented information, the Commission should forward Ms. Grant's concerns to these federal health agencies and to ask them (i) to provide to the Commission their evaluation of Ms. Grant's information, (ii) to indicate whether this new information provides any reasonable basis for modifying the RF safety recommendations to the Commission, (iii) and, if so, to prepare and provide to the Commission a risk assessment in accordance with the guidelines provided in the 1997 report of The Presidential/Congressional Commission on Risk Assessment and Risk Management[59], insofar as these recommendations have been prepared by a Commission having the support of both Congress and the President. (iv) The Commission's rules should provide for this approach for all subsequent occasions when concerned parties provide the Commission what they find to be evidence supporting more stringent RF rules of the Commission.

(c) The record suggests that in the past that the federal health agencies have found the Commission's RF environmental evaluation guidelines not sufficiently protective of the public health, but still did not inform the Commission unless specifically asked to do so. First consider that in 1986 the EPA reported that the average whole body specific absorption rate of 0.4 W/kg may *"likely not be protective to sensitive persons,"*[11] and reported that a average whole body specific absorption rate ("SAR") of 0.08 W/kg would *"provide the protections for even sensitive persons from adverse thermal effects."*[11]. EPA also noted in 1986 that the 1986 National

Council for Radiation Protection and Measurement ("NCRP") recommended the 0.08 W/kg SAR limits for the general population.[11]

Yet, it was not until the Commission sought advice by way of its April 8, 1993 Notice of Proposed Rule Making ("NPRM") in this proceeding that EPA responded and advised the Commission to adopt the NCRP limits - seven years after EPA noted the Commission's 0.4 W/kg may "*likely not be protective to sensitive persons.*" Hence, the EPA was silent for seven years and did not advise the Commission that its RF limits (based upon the 0.4 W/kg limit) may not be sufficiently protective - even though it had reached that assessment seven years prior to advising the Commission upon being asked to do so.

To permit applying FDA and NIOSH comments to the Commission's RF limits, consider the Commission finds the 1986 NCRP power density exposure limits have almost the same values as the 1991 RF limits of the Institute of the Electrical and Electronic Engineers ("IEEE") which was adopted by the American National Standards Institute in 1992 ("1992 ANSI/IEEE")[12]. Also while both FDA and NIOSH now encourage the Commission to adopt more stringent limits almost identical to 1986 NCRP, these agencies remained silent for seven years after these limits were already established by NCRP. Eventually they only gave their advice when asked by the Commission.

Thus, there appears to be a pattern that the federal health agencies, unless explicitly asked by the Commission, will not advise the Commission that more stringent Commission RF exposure criteria are needed - even when these agencies hold that conclusion. Thus, the Commission should not expect the federal health agencies to advise it that its RF standard needs to be more stringent - unless these agencies are explicitly asked by the Commission for their advice.

2.3 Therefore, given the above, when parties, such as the Ad-Hoc Association in this proceeding, provide RF health information to the Commission and claim such information justifies changes in the RF rules of the Commission, then the Commission should follow the procedures given in 2.2.2 (b) (i),(ii), (iii), (iv) above.

2.4 Consider evaluations of FCC 96-487 petitions when deciding upon petitions for reconsideration of FCC 96-326: The Commission should also request the federal health

agencies participating in this proceeding to evaluate the Ad-Hoc Association Petition and the Cellular Phone Taskforce Petition regarding FCC 96-487 because the information therein pertains to petitions for reconsideration concerning FCC 96-326.

3. The Commission needs to modify its statements of the protection provided by its standard.

3.1 Beliefs of the Commission based upon misunderstood or overlooked information:

As noted by the Ad-Hoc Association FCC 96-326 Petition at page 16, 18, the Commission misunderstood the protections provided by its rules when it stated,

"We believe that the guidelines we are adopting will protect the public and workers from exposure to potentially harmful RF fields." [FCC 96-326, paragraph #1]

"We believe that the guidelines we are adopting represent the best scientific thought and are sufficient to protect the public health." [FCC 96-326, paragraph #168]

"They (the Commission's guidelines) *will provide assurance that recent scientific knowledge is taken into account regarding future decisions on approval of FCC authorized facilities and equipment."* [FCC 96-326, paragraph #169]

Further evidence for this is shown in #4 below, and which supports that some important recent scientific knowledge was not properly taken into account and supports the need for correctly specifying protections provided by the Commission's rules and with notice of evidence of adverse effects and other effects of likely concern which occur below the Commission's hazard threshold (e.g. reduction in REM sleep due to RF) .

3.2 Inconsistencies in the rationale for NCRP limits raises doubts as to its protection

The Commission has stated that its limits for field strength and power density are based in part on NCRP section 17.4.2 [FCC 96-326, footnote 1]. NCRP 17.4.2 gives four reasons for having a more stringent tier for the general population:

(i) "Individuals subjected to RFEM radiation outside the work place are generally unaware of their exposure, and furthermore, if they are aware , they rarely have the option to reduce their exposure,"

(ii) "Second, the population at large, some members of which could be exposed continuously to RFEM fields, contains sub-populations of debilitated or otherwise potentially vulnerable individuals for whom there is presently inadequate knowledge to set firm standards,"

(iii) "Third, because the general population is much larger than the occupational population, there are more persons at risk, and hence, the proportionate number of persons susceptible to potential harm can be greater unless exposure of the general population is kept at a lower level. "

(iv) "The rationale for the reduction by a factor of 5 [from 0.4 W/kg for occupational exposure to 0.08 W/kg for general population exposure] *is based on the exposure periods of the two populations, rounded off to one digit (40 work hours per week/168 hours per week = ~0.2)"* [NCRP 1986, Section 17.4.2]

The above rationale is inconsistent because reason (iv), which assumes the potential for cumulative effects, seeks to keep the amount of weekly exposure the same for the two populations, the general population having the potential for being exposed 5 times longer per week. This being so, NCRP then provides no further safety ("uncertainty") factor to take into account factors (i), (ii), and (iii) above.

Therefore, in adopting NCRP 1986 and its rationale that the above 4 factors need to be addressed, it is necessary that a reduction greater than 5 be made to achieve the general population limits.

If EPA recommends 0.08 to protect against adverse thermal effects, it likely is not considering the potential for cumulative effects considered by NCRP 1986. Therefore, for EPA to be consistent with its support of the NCRP 1986 rationale, EPA must realize it has overlooked or misunderstood the above inconsistencies, and if it will continue to support the NCRP 1986 rationale, including limiting a cumulative weekly dose, EPA must acknowledge that the 5 fold reduction does not provide protection for the factors addressed in the NCRP 1986 rationale.

4. EPA reaffirmed in January 1997 that the FCC standard only is known to protect against thermal effects, and supports the Ad-Hoc Association requests that the Commission specify this limited protection in its standard:

4.1 Letter of Reaffirmation: As noted in 1.1 above, Ms. Mary Nichols, Environmental Protection Agency ("EPA") Assistant Director of the Office of Air and Radiation reaffirmed in a

January 17, 1997[68] letter to the Commission the claim in the Ad-Hoc Association Petition that the protection of the Commission's criteria is known only to prevent adverse thermal effects.

Consider that on July 25, 1996, the EPA Administrator wrote the Commission that its new RF safety approach,

"is consistent with our comments made in 1993 and addresses our concerns about adequate protection of public health."[63]

Then, in responding to my request for clarification of *what "adequate protection"* meant, Norbert Hankin, an EPA scientist, explained in an October 8, 1996 letter to David Fichtenberg,

"The FCC does not claim that their new exposure guidelines provide protection for effects to which the 4 W/kg SAR basis does not apply."[15]

[4 W/kg means 4 watts of energy from radio signals absorbed per kilogram of body weight; SAR means specific absorption rate of radio signal energy]

Concerning chronic exposures at much lower levels, he quoted from the EPA Nov. 9, 1993 comments to the Commission[37] which noted that there were results from *"a small number of studies suggesting potentially adverse health effects (cancer) may exist ...."* He then clarified that the *"adequate protection"* referred to by the EPA Administrator *"pertains to thermally related health effects."*[67] Mr. Hankin noted this assessment was consistent with the 1993 EPA comments.

Thereafter, in the above January 1997 letter of Ms. Mary Nichols, she noted, *"some confusion has arisen about EPA's support for the FCC final RF exposure guidelines."* She also said, *"Apparently, Mr. Hankin's response has been incorrectly construed as a departure from the Administrator's position in July (1996)."*

Please note Ms. Nichols finds that Mr. Hankin's letter was ***"incorrectly construed,"*** implying Mr. Hankin correctly clarified and construed the position of the EPA Administrator. Since she found it appropriate to address the Commission, this suggests the source of the confusion may be that the Commission did not properly understand the limited scope of the *"adequate protection"* referred to by the EPA Administrator. Indeed, this possible misunderstanding by the Commission only may have come to light due to Mr. Hankin's clarification.

4.2 Listing of key EPA 1993 concerns addressed by the new approach of the Commission

In order to understand the nature of EPA's support for the new approach of the Commission, it is important to understand EPA's objections to the Commission's 1993 NPRM and to see what changes the Commission made to address those objections. This will show that the result is a better rule for providing protection from thermal effects and clarifying the limited protection provided - not a rule that provides more protection.

4.2.1 EPA told the Commission in Nov. 1993 not to adopt 1992 ANSI/IEEE because:

(a) It "allows a two fold increase in the MPE (maximum permitted exposure) at high frequencies" above that permitted by the current FCC guideline," and *"the application of the same MPE for both controlled and uncontrolled environments for frequencies from 15 GHz to 300 GHz are not improvements."*[13]

(b) Its *"two-level revised standard is not directly applicable to any population group but is applicable to exposure environments called 'controlled' and 'uncontrolled' environments that are not well defined and are discretionary."*[13]

(c) "Its conclusion that there is no scientific data indicating that certain subgroups are more at risk than others is not supported by NCRP and EPA reports."[13]

(d) "The thesis that the 1992 ANSI/IEEE recommendations are protective of all mechanisms of interaction is unwarranted because the adverse effects level in the 1992 ANSI/IEEE standard is based on a thermal effect."[13]

4.2.2. In Nov. 1993, EPA took the approach of recommending to the Commission the NCRP limits which would protect against adverse thermal effects, but did not contain the above 1992 ANSI/IEEE weaknesses. Indeed, EPA noted that NCRP did not presume its limits protected from all mechanisms of interaction, and noted that NCRP acknowledged,

"A response by an organism to RFEM radiation may have a thermal basis, an athermal basis, or a combined basis. Determination of which of these three classes of causation is operative in a given context rests upon appropriate experimentation and inference, not presumption. [page 2 of EPA 1993 comments, and NCRP 1986, page 276].

Please note that since the Commission adopted the NCRP limits it is also bound to adopt the above which clarifies the protection provided; also, EPA stressed this qualification in its recommendations to the Commission and to which the Commission said it would defer.

Moreover, EPA noted in its 1993 comments that below the adverse effects threshold of NCRP (and of the Commission) there were a *"small number of studies suggesting potentially adverse health effects (cancer) may exist,"* and then cited studies demonstrating such observed cancer associations. Also, the NCRP 1986 report, itself, provides in its Section 17.6.2 a University of Washington study finding a more than 3 fold increase in primary malignant tumors among rats exposed up to 25 months to RF exposure levels deemed safe by the NCRP thermal protection limits for people, i.e. 0.4 W/kg (10% of the Commission's 4 W/kg hazard threshold).

4.3 Thus, EPA has consistently sought to recommend adequate limits to protect against *thermal* effects. This is seen by the comments made by the EPA Administrator, by M.Nichols, and by N.Hankin, by its 1986 proposed RF alternative limits[11] for thermal protection, and by the EPA 1993 recommendations[37]. By the Commission having adopted the EPA recommendations, the Commission's approach became "consistent" with EPA concerns for an adequate thermal protection standard. This is what Mr. Hankin clarified and what Ms. Nichols reaffirmed.

4.4. Other standard setting bodies support the EPA claim that the FCC hazard threshold of 4 W/kg is known only to protect against adverse thermal effects.

4.4.1 The National Institutes of Occupational Safety Health (NIOSH) told the FCC:,

"The exposure levels that would be set by the standard are based on only one dominant mechanism - - adverse health effects from body heating. Nonthermal biological health effects have been reported in some studies and research continues in this area. The standard should note that other health effects may be associated with RF exposure and that exposure should be minimized to the extent possible." [NIOSH, 1994, page 1, General Comments section].

Note that the 1992 ANSI/IEEE standard to which NIOSH was referring and the Commission standard both have the same hazard threshold and primarily the same exposure limits[1], so the NIOSH comments also apply to the Commission's standard.

Moreover, when Dr. G. P. Schulte of NIOSH responded July 25, 1996 in his letter to the Commission regarding the Commission's new approach, he stated, *"NIOSH appreciates the opportunity to reaffirm the comments submitted January 11, 1994."* He thus reaffirmed that NIOSH finds the Commission's 4 W/kg hazard threshold is based on preventing *"adverse health effects from body heating,"* and that *"Nonthermal biological health effects have been reported in some studies and research continues in this area."*

Moreover, while Dr. P. Schulte states that NIOSH concurs with the approach of the Commission, he qualifies this by clarifying the Commission's rules only *"improve the health and safety guidelines."* Note he only says "improve," and he does not state the Commission's approach will be, *"sufficient to protect the public health,"* as the Commission claims [paragraph #168]. Indeed, how could NIOSH claim this after having indicated the Commission's hazard threshold is based upon only preventing the adverse effects of body heating, and then also indicating that nonthermal effects have been reported and that research continues? Clearly, Dr. P. Schulte is noting that while the Commission's standard is an improvement, it still can claim to only protect against adverse thermal effects.

4.4.2. FDA Center for Device and Radiological Health (CDRH) also supports EPA's view that the Commission's hazard threshold provides limited protection. Indeed, the FDA told the Commission in 1993,

"it is unclear what types of biological effects and exposure conditions are addressed by the standard. For example, very few research studies of long-term, low-level exposures of animals were included in the scientific rationale for the standard, despite the existence of animal studies that suggest and association between chronic low level exposures and acceleration of cancer. Other studies have been published since finalization of the standard that strengthen this concern."[30]

Since the Commission notes its hazard threshold and limits are also primarily those of the above standard, the FDA comments also apply to the Commission's limits.

Furthermore, it is clear the FDA does not find the Commission's hazard threshold and exposure limits derived from it to be protective of all RF mechanisms of interaction since it told the Commission in 1993,

"Although the current state of scientific knowledge does not enable us to offer a specific alternative to the exposure levels in the new standard, we do not believe this standard addresses the issue of long term, chronic exposures to RF fields." [30].

If the FDA does not know what standard to recommend, and reports weaknesses in the hazard threshold upon which the Commission's standard is based, then the FDA certainly cannot conclude that the Commission's standard provides sufficient protection.

In addition, 1986 NCRP notes its limits should not be expected to protect from all mechanisms, and notes,

"Few studies of the human response to RFEM have been reported in the Western literature" [NCRP 1986, pg.172],

NCRP 1986 also notes that RF studies are,

"preponderantly based on acute exposures at relatively few frequencies," [pg. 278] and that "the greatest void of scientific knowledge" [pg. 190] includes study of "low-level (chronic) exposures to fields that range the spectrum and that are evaluated for modulation-specific influences." [1986 NCRP pg. 190]

Moreover, while 1986 NCRP reviewed reports published by the end of 1982, it nevertheless has a Section 17.6 on "Considerations For Future Criteria" in which more recent studies that were not considered for developing 1986 NCRP are noted which may affect future standards. Here a study is described of rats exposed up to 25 months at 10% (0.4 W/kg) of the 1986 NCRP and Commission average whole body SAR hazard threshold of 4 W/kg; results show a more than 3 fold increase in primary malignant tumors.[14,40] Note that 0.4 W/kg is the level 1986 NCRP and the Commission finds 'safe' for occupational exposures of workers.

Thus, since the Commission's standard is based upon the same hazard threshold as 1986 NCRP and 1992 ANSI/IEEE, it can be presumed that the FDA would say of the Commission's standard that *"we do not believe this standard addresses the issue of long term, chronic exposures to RF fields."*

Hence, if the FDA cannot offer an alternative to the Commission's hazard threshold, believes important chronic exposure studies are lacking, and is concerned about observed results of 3 fold increases in primary malignant tumors, then how can the Commission conclude the FDA believes the Commission's limits *"will protect the public and workers from exposure to potentially harmful RF fields,*[69] and that these limits *"are sufficient to protect the public health*[70] *"*?

Indeed, after reviewing the Commission's new approach, Dr. E. Jacobson of the FDA concluded her July 17,1996 letter to the Commission stating,

"The current FCC proposal represents a significant step toward achieving a consensus guideline on RF exposure which will have the support of the federal agencies responsible for protecting the public from nonionizing radiation injury."

Notice Dr. Jacobson only said "a significant step". Hence, the FDA clearly states its position from 1993 has not changed, i.e. that while the Commission's reducing its exposure limits is "a significant step," that there remains too many unknowns and that *"other studies have been published since finalization of the standard* (1992 ANSI/IEEE) *that strengthen this concern* (that chronic low level RF accelerates cancer development)". Consequently the support of the FDA, as